AI-Driven Profit Optimization – Unleashing the Power of AI in Business Central for a Competitive Edge

By Partners, For Partners
DIRECTIONS
NORTH AMERICA

April 14-17, 2024   Sheraton San Diego Hotel & Marina, San Diego, CA

Agenda

- Introduction

- Setting the scene: The business problem

- Taking our client through the data maturity curve

- AI-powered decision making for price, promotions and inventory

- Conclusion

Introduction

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OmniData

Microsoft Solutions Partner for Data & AI

Business Problem

We are giving discounts, are they working?

Did my promotions work?

How do we prevent over-, and under stocking?

Can we use data and AI to better price, promote and plan supply chain activities?

The Challenges

Thousands of products

Products to be analyzed & modelled close to **70k+**

Product launch dates are **scattered** over time

Data sparsity varies considerably between product types

The Challenges

Market & macroeconomic forces
on sales?

How do we measure the impact of
COVID-19?

Macroeconomic factors influence
products in many ways

How do we best account for
seasonality?

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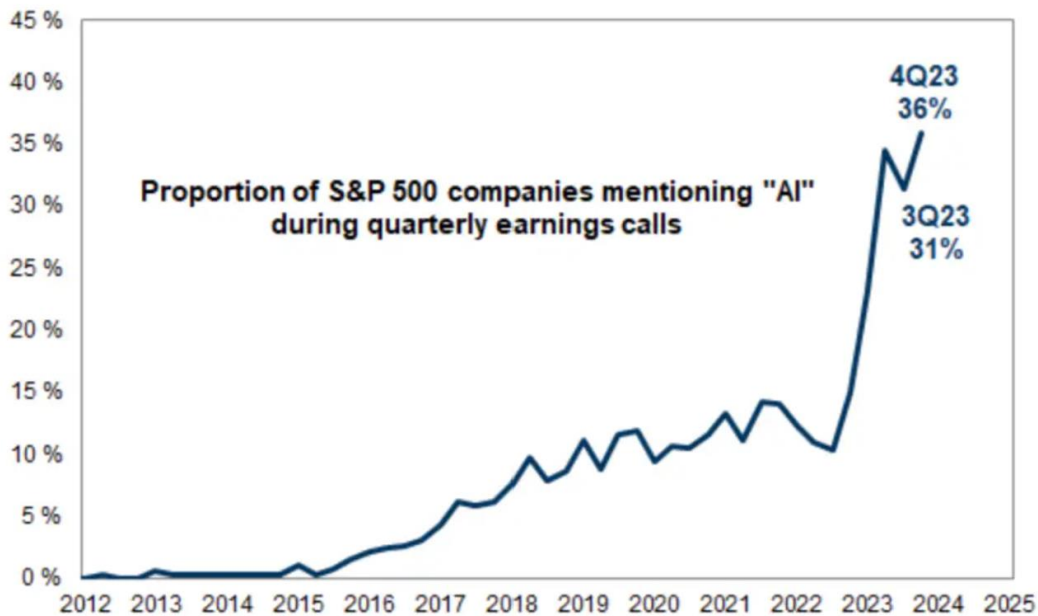NORTH AMERICA

The Challenges

Over- and under stocking

Certain products have short term **expiry dates**

How can we optimize **warehouse handling cost**

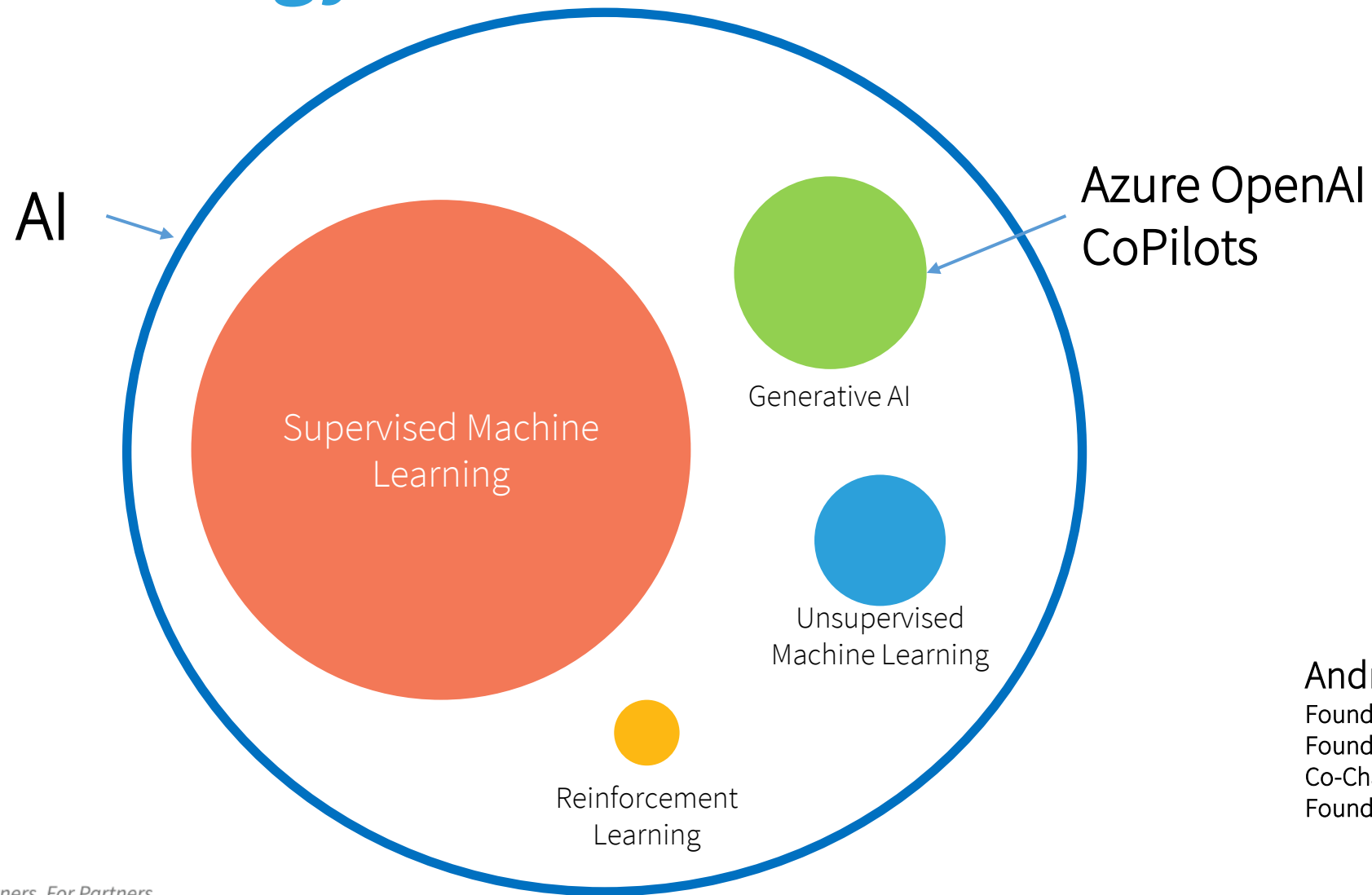Slow moving stock leads to reduced **liquidity**

AI Momentum

Proportion of S&P 500 companies mentioning "AI" during quarterly earnings calls

4Q23 36%

3Q23 31%

AI mentions on earnings calls have skyrocketed. Goldman Sachs

- AI… it's on everyone's mind

- Microsoft Annual report 2023 had 120 times the abbreviation AI

- … 67 times in Satya's letter to shareholders alone

AI Terminology

AI

Azure OpenAI
CoPilots

Supervised Machine Learning

Generative AI

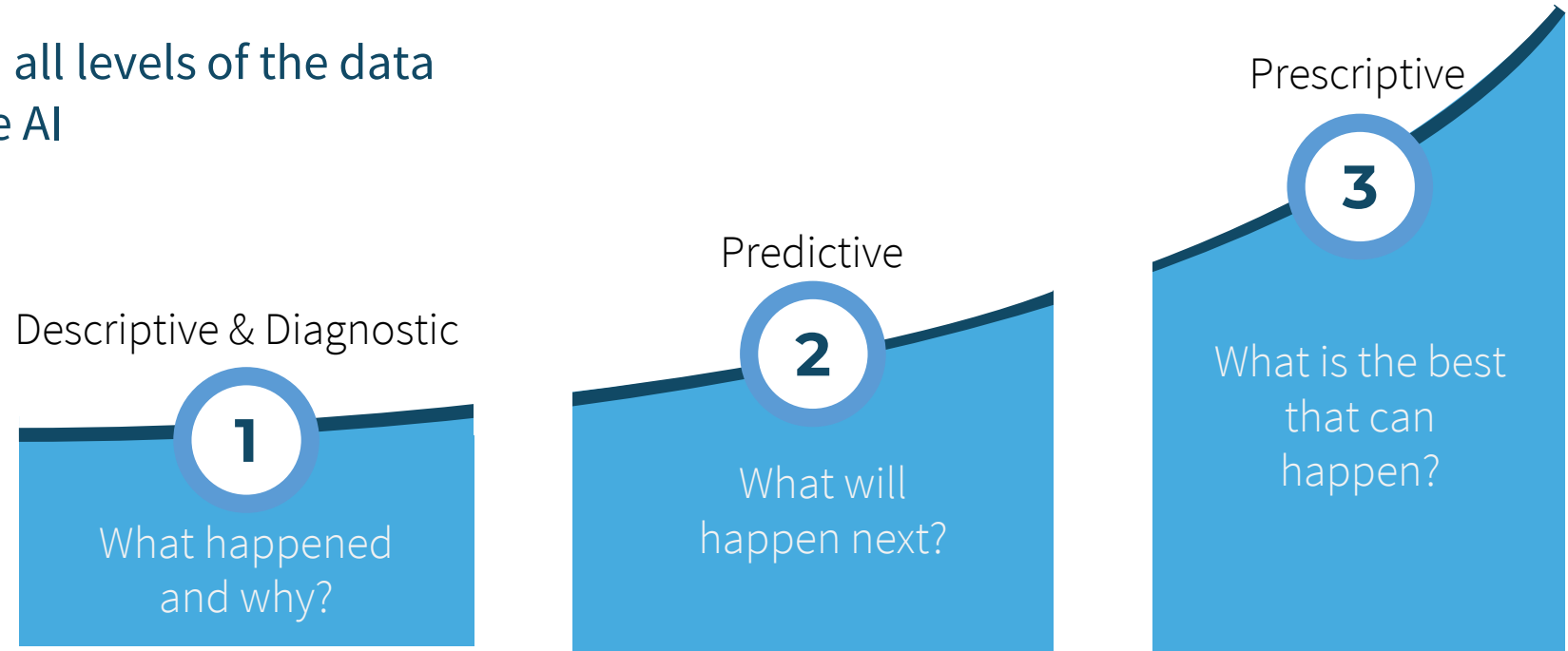Unsupervised Machine Learning

Reinforcement Learning

Andrew Ng –
Founder and CEO Landing AI
Founder at deeplearning.ai
Co-Chair and Co-Founder Coursera
Founder and ex-lead of Google Brain project

Data Analytics Maturity Curve

How can AI help?

Make sense of the data on all levels of the data maturity curve to leverage AI

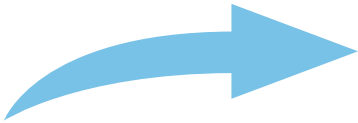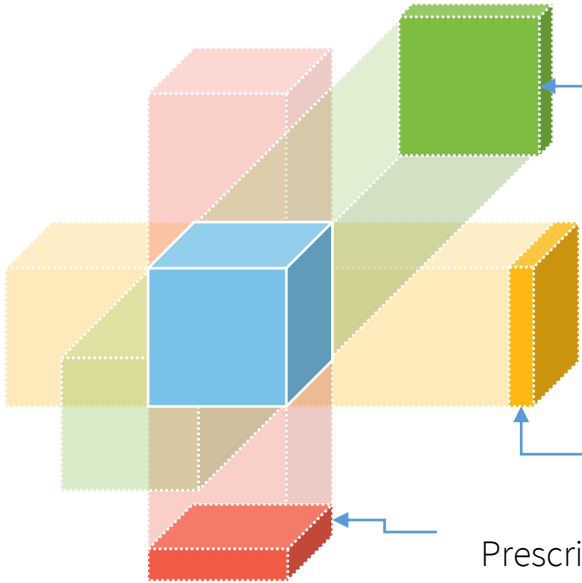Descriptive & Diagnostic

1

What happened and why?

Predictive

2

What will happen next?

Prescriptive

3

What is the best that can happen?

The Nuts and Bolts

System of Record

System of Insights

Internal user

Microsoft Dynamics 365
Business Central

Dynamics 365

Tables & Data

Descriptive & Diagnostic
1
What happened and why?

Predictive
2
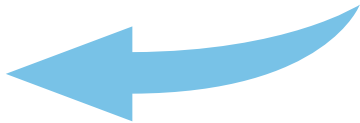What will happen next?

Prescriptive
3
What is the best that can happen?

Predictive Analytics
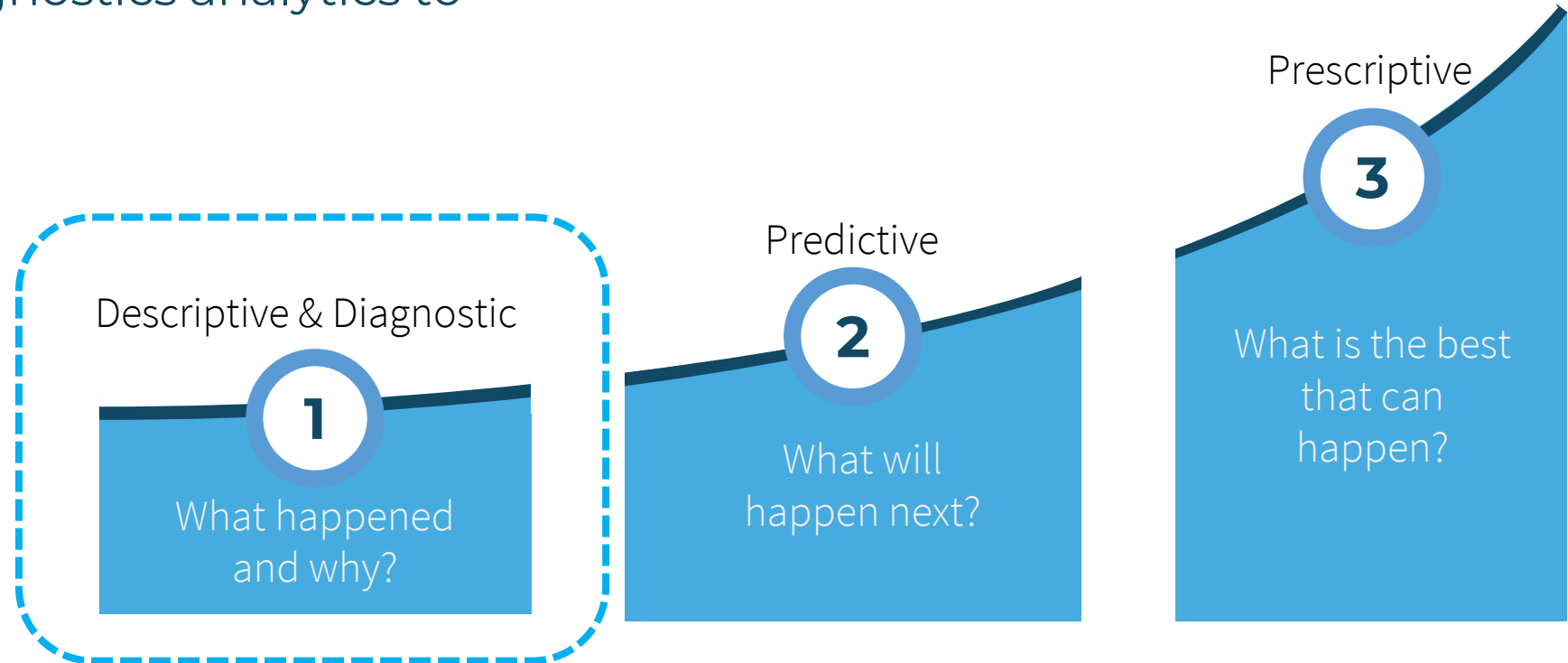
Descriptive & Diagnostic Analytics

Prescriptive Analytics

The Challenges

Descriptive & Diagnostics analytics to start

Descriptive & Diagnostic

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Data Analysis
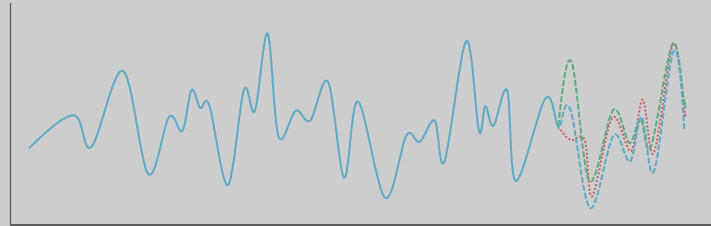
Step 1

Input Data

- Sales
- Pricing
- Seasonality
- Macro economics

Historical data used to build features as input to modelling

AI Generated Demand Forecasts

Actual — Forecast
Optimized Scenario 1 — Optimized Scenario 2

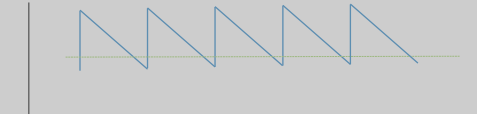Demand forecasts generated and optimization algorithms applied to generate scenarios

Optimized Pricing, Promotion & Inventory management

Optimized Price Movements

Optimal Promotion Schedule

Optimal Inventory Ordering Points

Pricing architecture along with promotion selection and optimized inventory ordering points

Business Questions

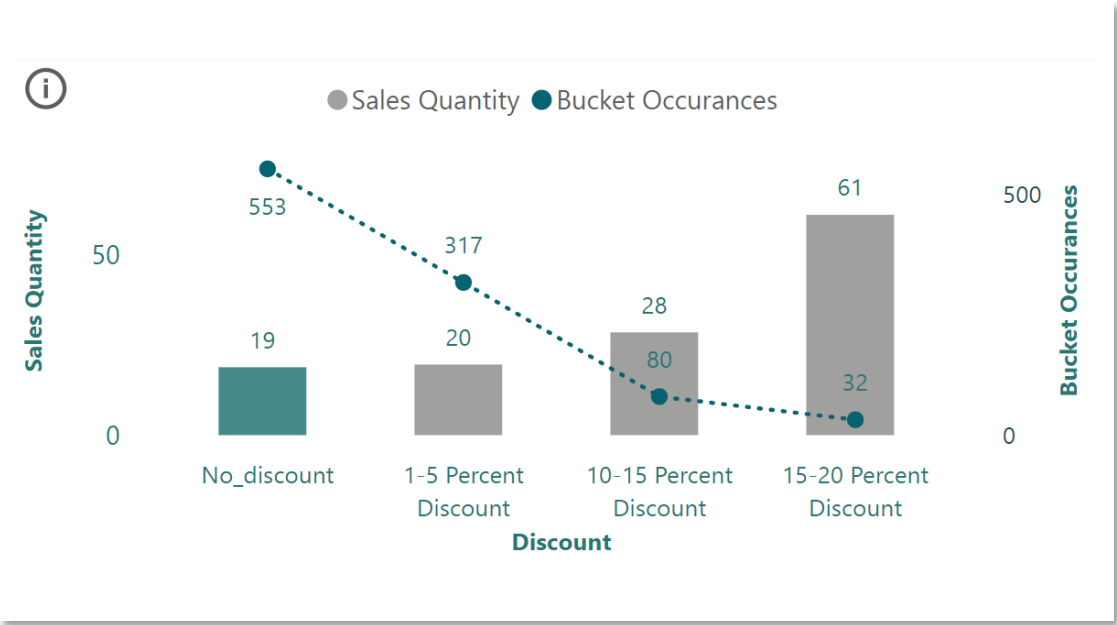Did my **discounts** and **rebates** result in a lift in sales?

- Decentralized pricing per branch
- Making above normal exceptions on price for demanding customers
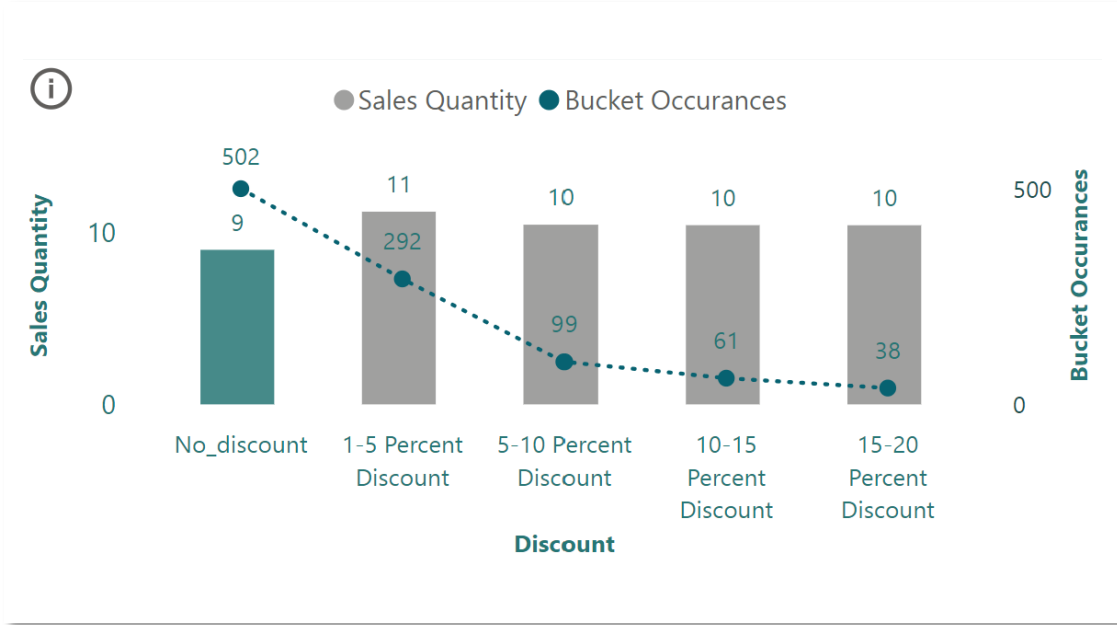- At what depth-level should I be giving discounts?

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Discount Bucket Performance

Product 1

Product 2

300% More than **three times** average daily sales between **no discount** and **15-20%**

10% Similar average daily sales for **all** discount buckets
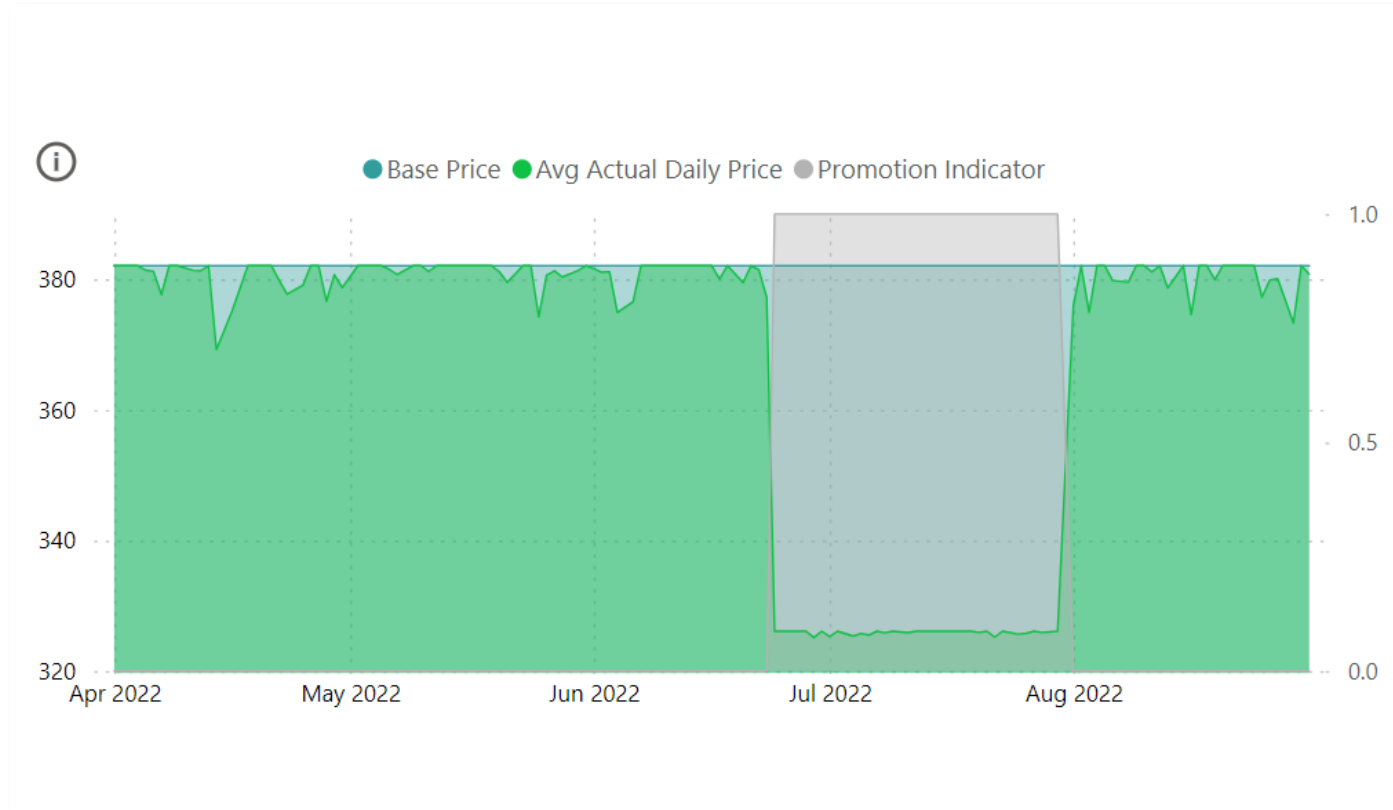
Business Questions

Did my promotions work?

We don't have data on historical promotions.

What about the effect on other associated products?

Which substitute products did we cannibalize?

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Historical Promotions

Historical promotions data was **not** captured making optimization impossible

Using the **listed price** and **actual daily price** used an algorithm to pick up these patterns

Provided the timeframe for historical promotions and the depth

Helped the client **implement** a process to capture going forward

Promotion Performance

Item	Mean Sales (Promoted)	Mean Sales (Non-Promoted)
1013	132	121
2705	93	95
2554	55	56
1209	41	20

Most promotions perform very similar to non-promotion windows

LEATHER OIL 1L SOLO

SKU Market Basket

DUBBIN 500ML PRODIST

SADDLE SOAP 500ML SOLO

Associated product sales impact

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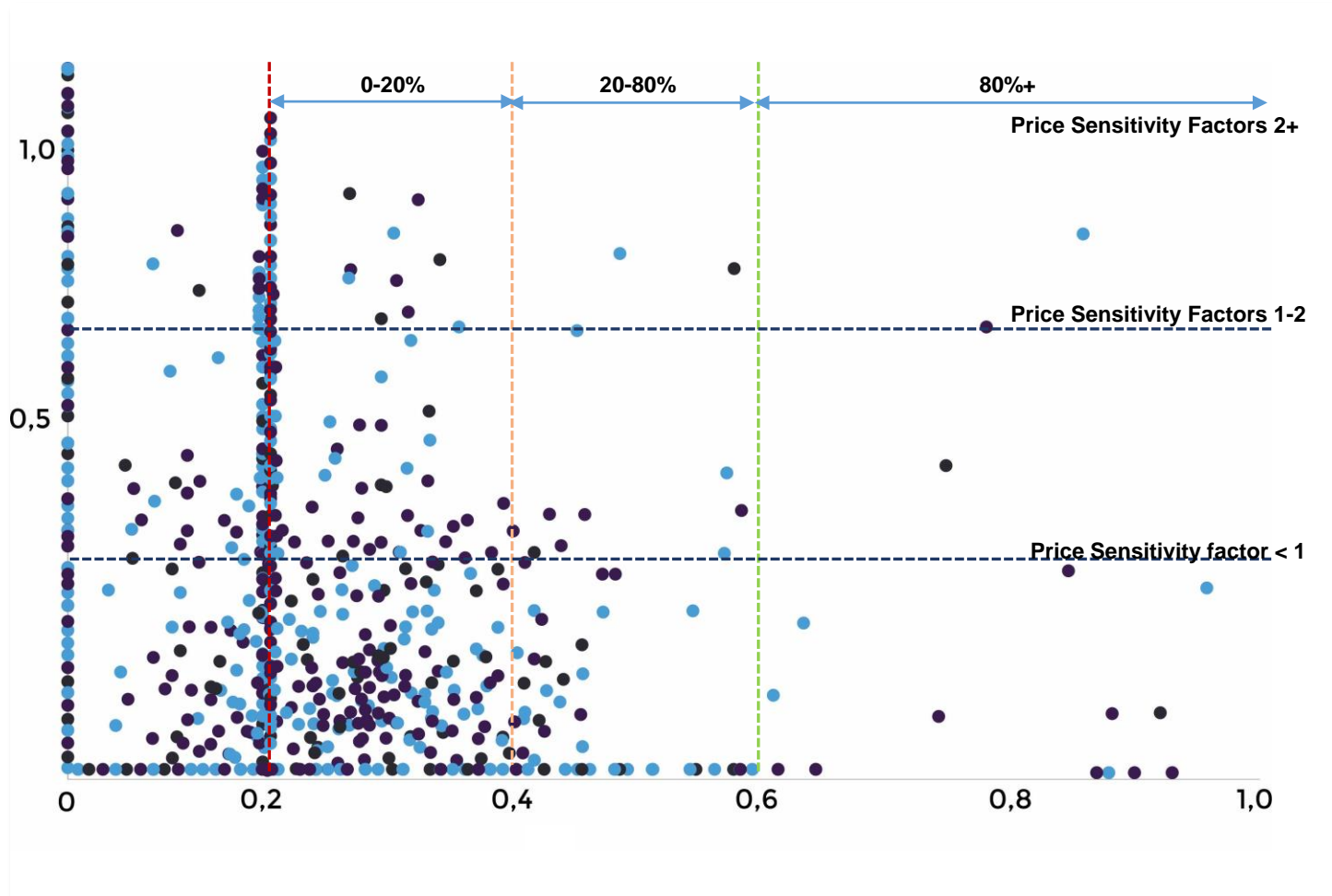
Business Questions

Everyday low prices vs
High-low strategy?

Which pricing strategy should I apply to which product?

We don't sell one category or type of product.

Category managers have different strategies, how do we enable them?

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Price & Promotion Sensitivity

Products in top-left quadrant normally necessity-type products

Large portion of products low on price sensitivity with high potential for margin extraction
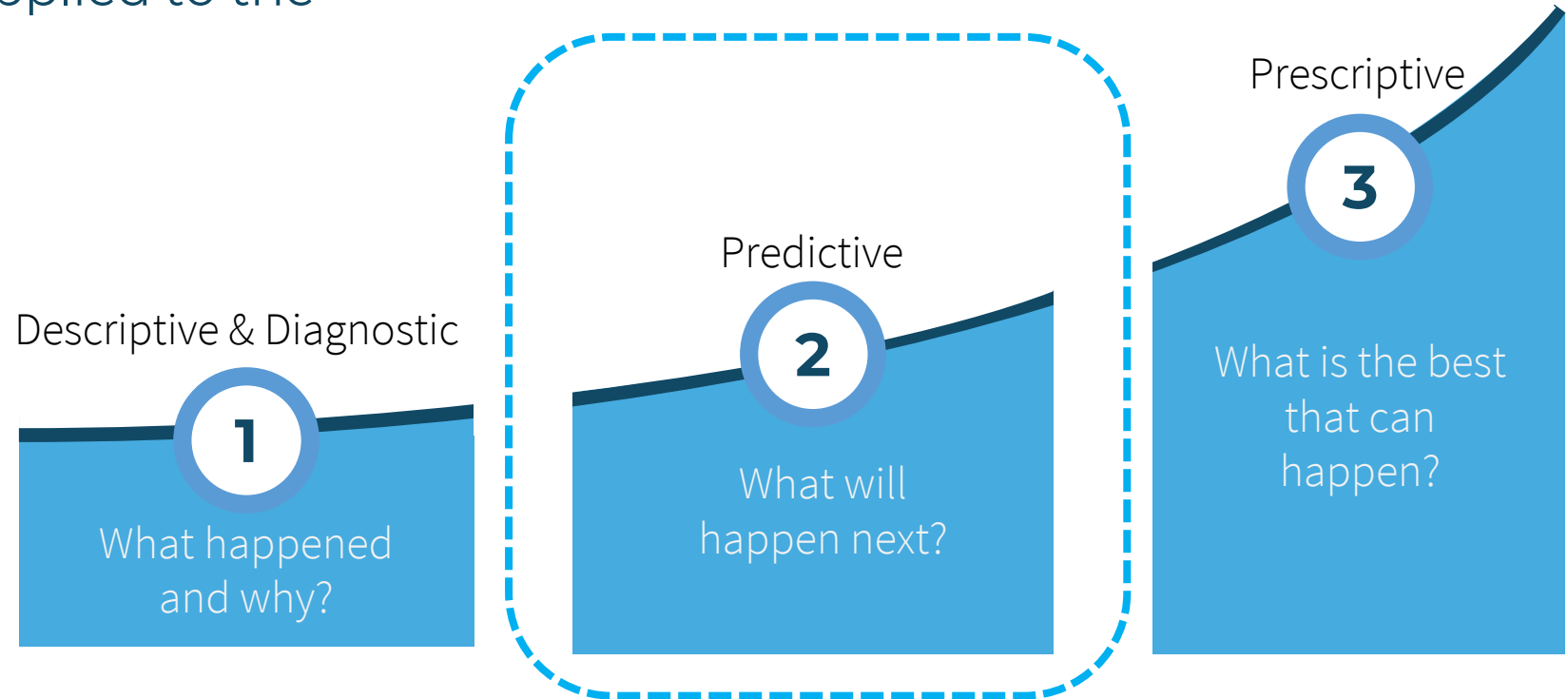
Few products with significant increases in sales when on promotion

Price strategies tailored to matrix:

- Everyday low prices in top-left quadrant
- High-low strategy in bottom-right quadrant
- Margin extraction and optimize-for-value pricing bottom-left quadrant
- Top-right quadrant low-low strategy

The Challenges

Predictive analytics applied to the solution

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Demand Forecasting & Scenarios
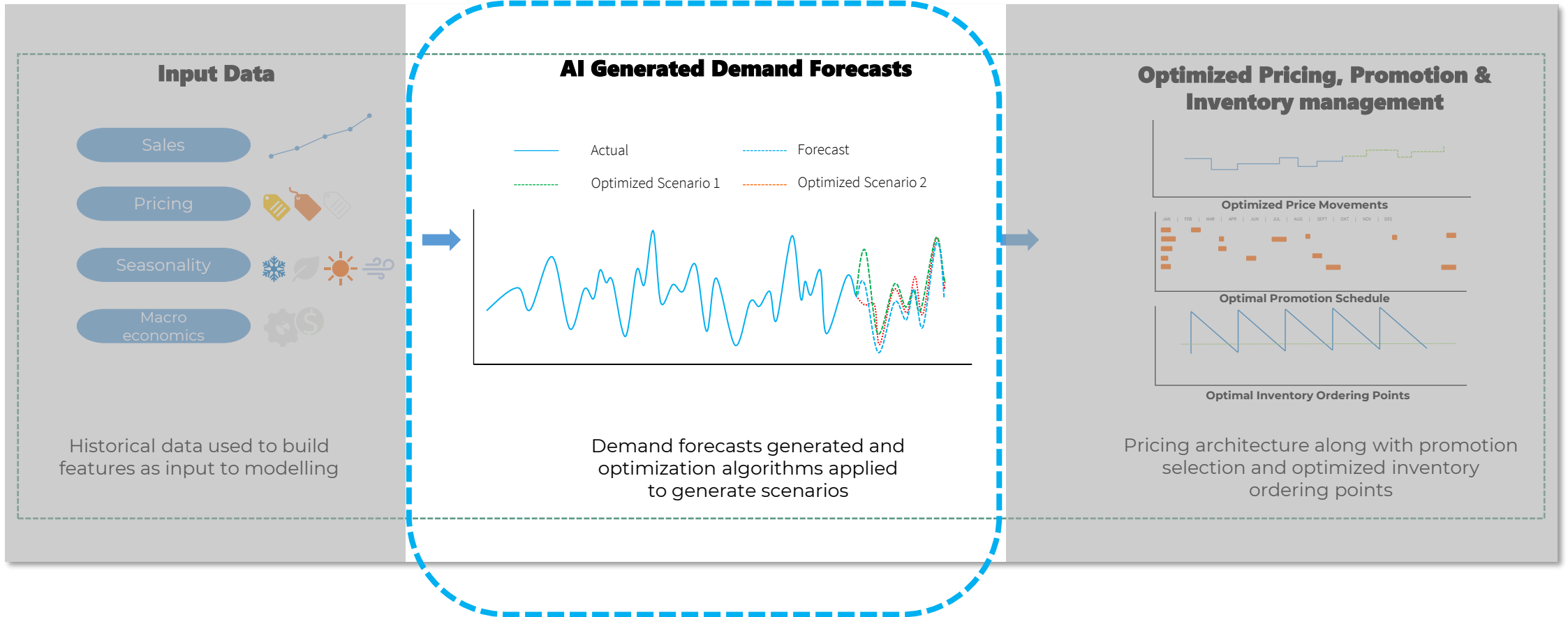
Demand Forecasting & Scenarios
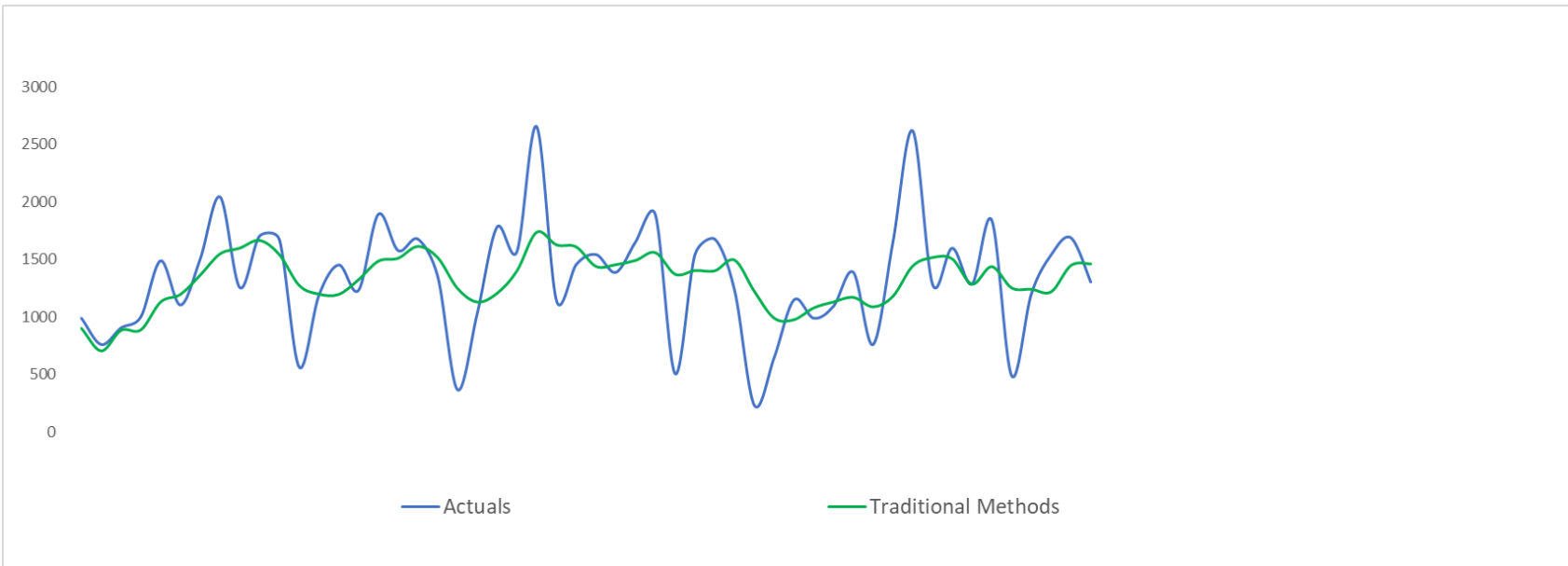
Traditional forecasting methods do not provide accurate forecasts

Over-, and under forecasted demand led to inventory mismatches

Demand Forecasting & Scenarios
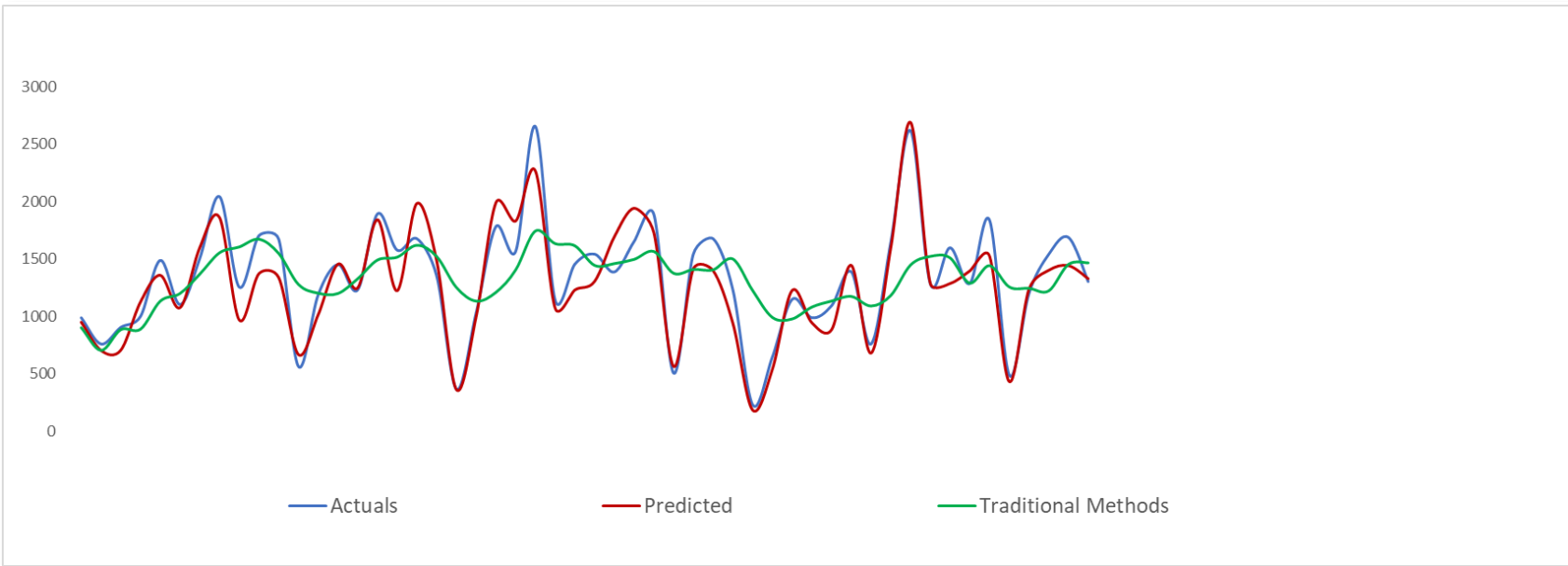
Predictive analytics improved forecast accuracy significantly

Accuracy improved from **70%** to **94%**

Demand Forecasting & Scenarios

Forecasting algorithms applied to thousands of product level information

12-24 months volume forecasts generated per product

Demand Forecasting & Scenarios
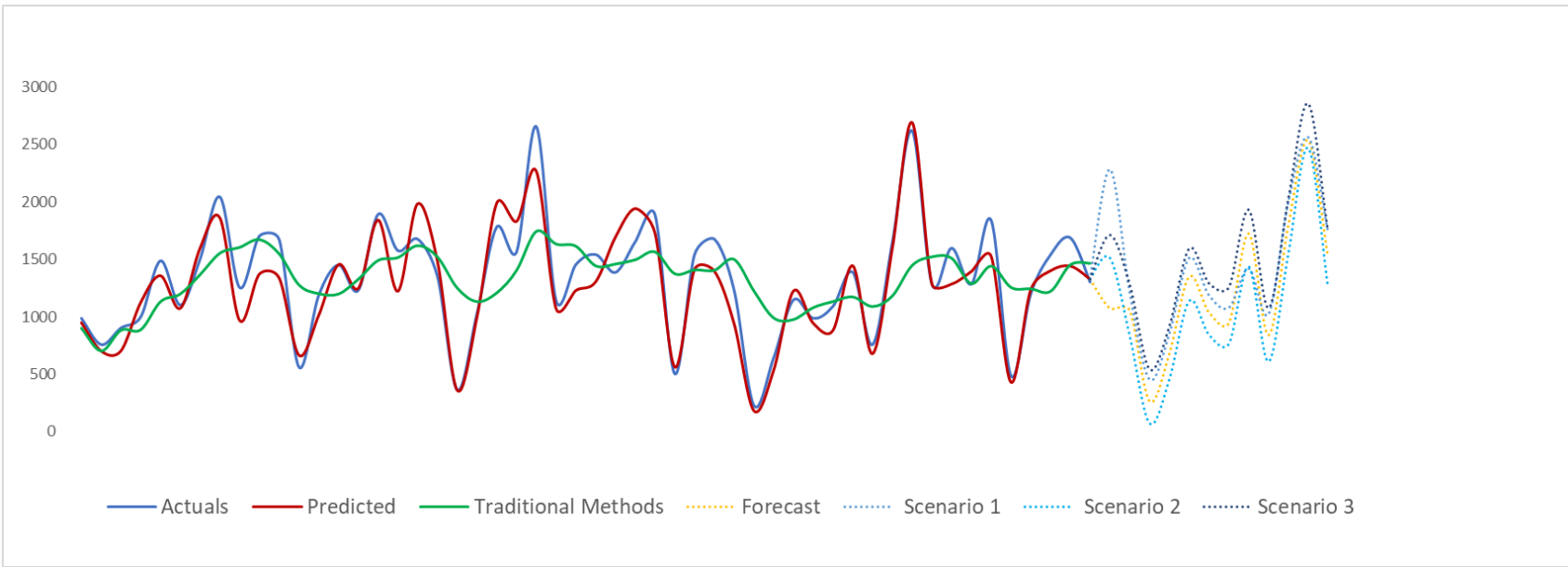
AI provided possible forecast **scenarios**

Optimizing for price, promotions and inventory management

AI provided **how** to adjust prices, **when** to place products on promotion and strategies for **purchasing** new inventory

The Challenges

Predictive analytics applied to the solution

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AI Driven Decision Making

Step 3

Input Data

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Pricing

Seasonality

Macro economics

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JAN FEB MAR APR JUN JUL AUG SEPT OKT NOV DES

Optimal Promotion Schedule

Optimal Inventory Ordering Points

Pricing architecture along with promotion selection and optimized inventory ordering points

Dynamic Pricing & Promotions

Optimized Price Movements

Optimized price architecture with suggested promotion windows per product

Optimal vs Current Product Price

● Optimal Price ● Historical Current Price ● Predicted Current Price ● -5% ● -10% ● -20% ● -30% ● Promo Flag
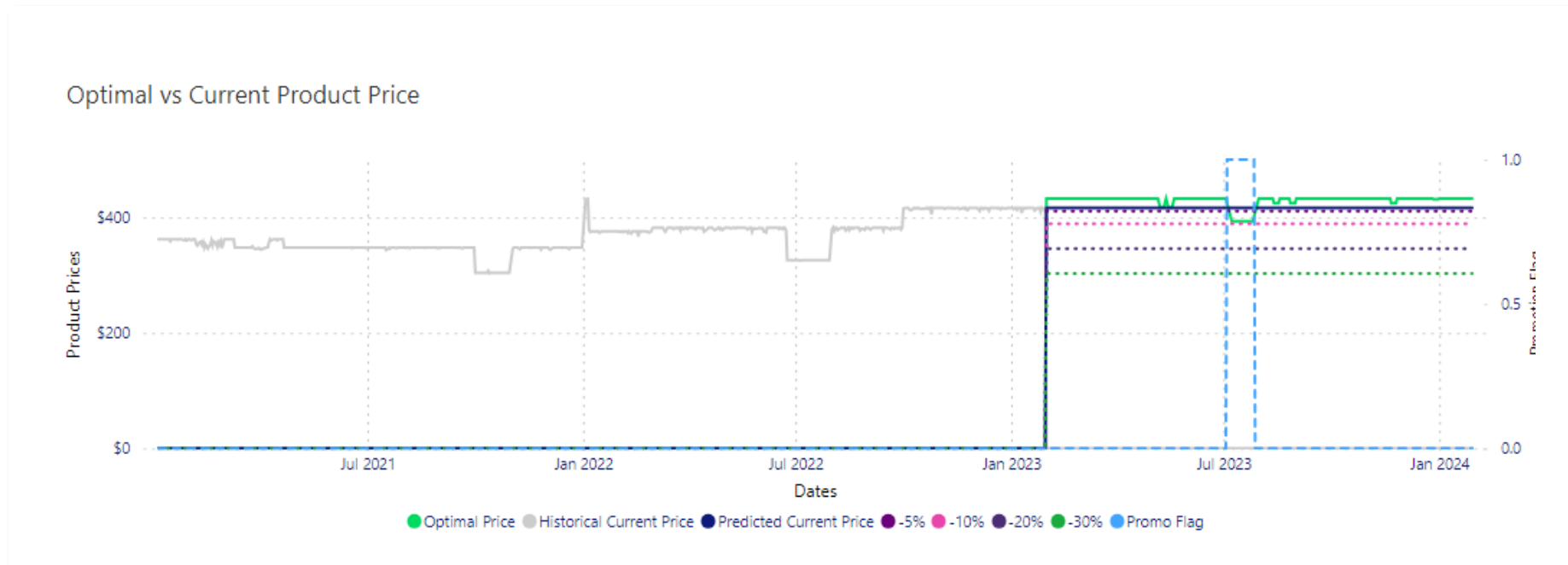
Intelligence Inventory Ordering

Optimal Inventory Ordering Points
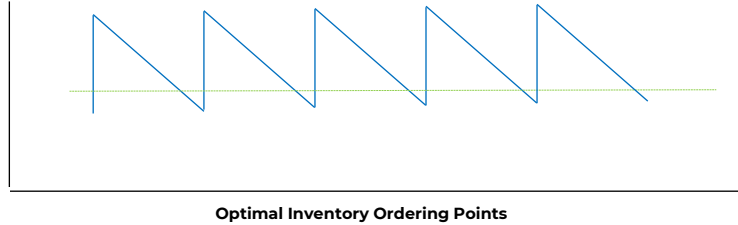
Optimized inventory ordering points with quantities given lead times and safety stock inputs
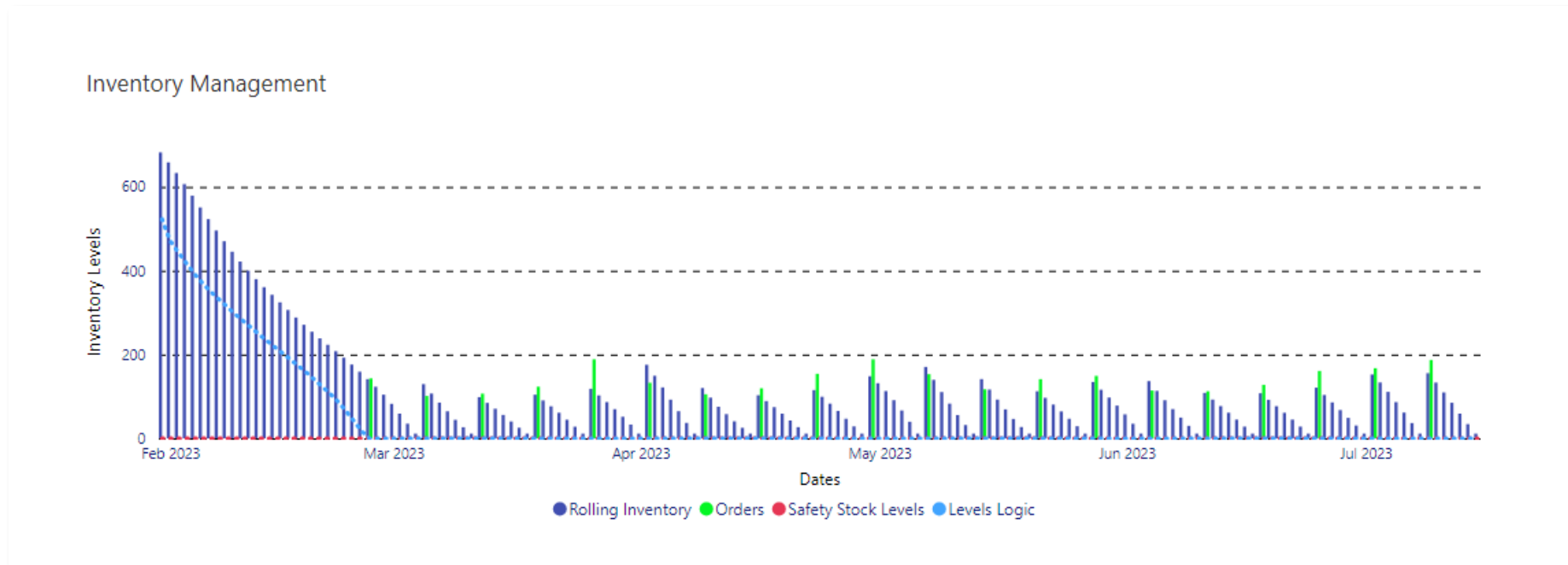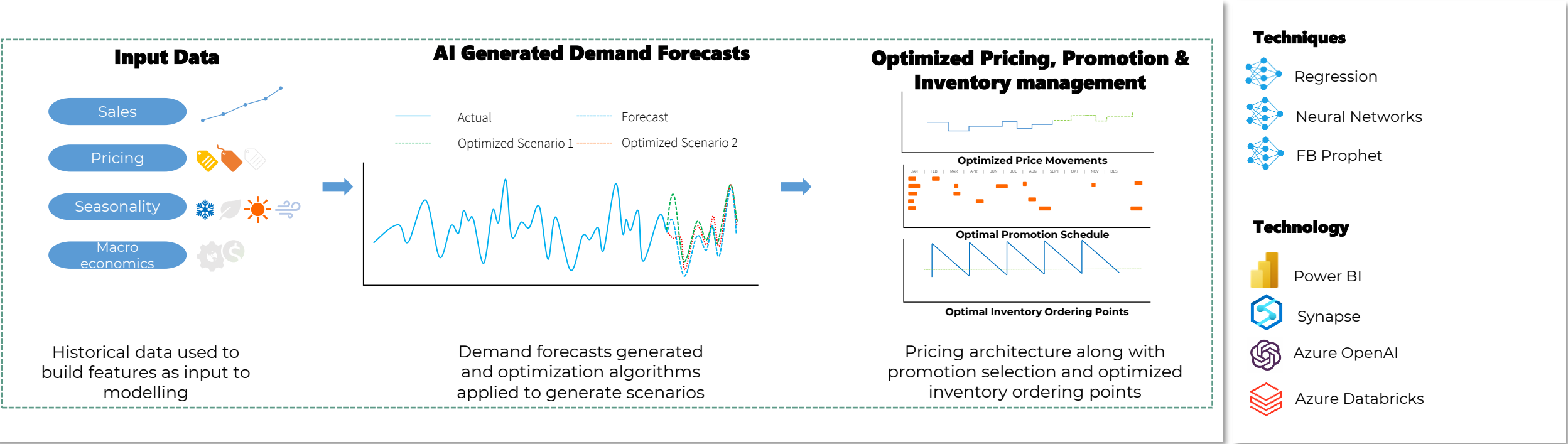
The Results

Business Benefits:

3% increase in revenue through pricing strategies

$50M in working capital released for operations

Increased promotional effectiveness by 50%

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Techniques
- Regression
- Neural Networks
- FB Prophet

Technology
- Power BI
- Synapse
- Azure OpenAI
- Azure Databricks

Thank You!

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